The Deaf-Blind Child

by

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PERKINS SCHOOL
FOR THE BLIND

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Diagnosis and Training

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Foreword

Perhaps there is no group of children for whom the problem of diagnosis is as important, and at the same time as difficult, as those who are deaf and blind. Their education is very costly and the available facilities extremely limited. Consequently, a poorly-planned educational program is not only wasteful in itself, but deprives others of opportunity.

Several years ago I became interested in the diagnostic work which Dr. Helmer R. Myklebust was doing with deaf children at Northwestern University. Perkins invited him to assist in the study of our deaf-blind children and he responded with enthusiastic interest.

This booklet indicates the approach which Dr. Myklebust is taking towards a solution of the diagnostic problem of children who do not see and do not hear. Perkins welcomes the opportunity to publish it as a contribution to the professional literature of this highly-specialized educational field.

EDWARD J. WATERHOUSE, *Director*
Perkins School for the Blind

October, 1956

THE DEAF-BLIND CHILD

Diagnosis and Training[*]

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The deaf-blind child presents a challenge not only scientifically and theoretically but also from the standpoint of how we can best be of service to a fellow human being. Currently there is a new and concerted effort on the part of diagnosticians and educators to meet this challenge. Because diagnosis and training of the deaf-blind child is so difficult, some consideration is given first to a frame of reference. This is based primarily on the study of the psychology of sensory deprivation. It derives mainly from implications from studies on the psychology of deafness. Inferences are drawn for the psychological influences of blindness. The general theoretical frame of reference assumes that the organism naturally attempts to maintain adequate homeostatic relationships with its environment; that it does so on a self-preservation basis with the best means at its disposal.

Because the deaf-blind child has impairment of both hearing and vision it is helpful to consider the normal use and function of these senses. Vision is a directional sense. We see mainly in front of ourselves with some ability to see to the side. Hearing, psychologically and organismically, is a non-directional sense. We hear in all directions simultaneously. Another way to compare these senses is to regard vision as a foreground sense and hearing as a background sense. In this respect hearing is essentially passive and serves as an "antennae" type of contact and signaling sense, while vision is directed to the foreground; to that which is of immediate attention, that with which the mind is mainly concerned. An example is the way in which we hear something and immediately turn our head so that we can also see it.

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[*] Indebtedness is expressed to Edward J. Waterhouse, Director, Perkins School for the Blind, Watertown, Mass., and to his staff of the Deaf-Blind Department for their assistance with the study-project which is referred to in this discussion.

Nevertheless, there are numerous instances in daily life of hearing being used for the foreground and vision for the background. For example, when conversing with someone we may be listening intently to what is being said without regarding the speaker visually. A more obvious example is listening to beautiful music and actually closing our eyes in order that the visual environment not interfere with what we want to be as auditory an experience as possible. Usually hearing and vision are used reciprocally with hearing being the identifying, scanning, signaling sense and vision being the sense focused on the immediate circumstance or situation. It is interesting in this connection that nature has provided us with a means for closing our eyes but not for closing our ears. This arrangement by nature makes it possible for hearing, the background scanning sense, to function constantly, even while we are asleep. This is highly protective and provides for the safety and well-being of the organism.

Hearing and vision are the *distance* senses while the olfactory, tactile and gustatory are the *close* senses. It is interesting that developmentally the distance senses are the most mature and require the longest period for maturation. During the first few weeks of life the human infant is dependent mainly on his close senses for exploring and for adjusting to his environment. Gradually hearing and vision become co-ordinated and more useful. These then become the basic exploratory and contact senses in man.

Some forms of life remain essentially dependent on the close senses. The dog is mainly olfactory. By comparison recent study of the cat reveals that it is mainly an auditory animal. Another example of the *close* versus *distance* use of senses is that observed in childhood schizophrenia. Some of these children relinquish the foreground use of both hearing and vision and become *sniffers* and *tasters*.

We now come to the basic question of what it means to not be able to hear and to see. The most obvious implication is that the deaf-blind child, being deprived of his distance senses, must rely on his close senses. At this point it might be helpful to refer to studies on the psychology of deafness. Instead of immediately pursuing the question of what it means to be both deaf and blind, we first consider the question of what it means to be deaf. Throughout this discussion the term deaf is used to include all degress of deafness which are sufficient to preclude normal acquisition of speech.

Studies on the psychology of deafness indicate rather clearly that as soon as hearing is impaired to the extent that the child cannot acquire speech, he *shifts* and becomes essentially a visual-tactual organism. He uses vision for playing with an object in the foreground but periodically he looks around to scan the status of his environment. The normally seeing-hearing child can keep looking at the toy object because his hearing scans the environment for him.

These studies reveal that on certain tests which entail the use of vision alone, for example, certain memory tests, deaf children actually exceed hearing children. This should not be construed to mean that deaf children have superior vision or memory but rather that the nature of their deprivation is such that they find it necessary to use their vision differently; under certain specific circumstances they use it more effectively. This illustrates that certain *shifts* in sensory behavior do occur as the organism makes its best possible adjustment to its environment. In the case of deafness, the shift is to the remaining distance sense, vision. Apparently the deaf child's use of vision is supplemented primarily by the tactual sense but all of the close senses are used in a manner which seems different from the individual who has normal integrity of all of his senses.

By inference a similar circumstance seems to prevail with the blind. Because of visual impairment the shift is to audition, the remaining distance sense. Comparable to the deaf, who use vision, the blind use hearing in the same manner for both foreground and background purposes. Hearing continues its scanning function (perhaps it is even intensified) but it also serves the purpose of immediate exploration and attention. Again, as with the deaf, the tactual sense seems to be the basic supplementary sense. However, the olfactory sense fulfills a more direct role than is apparent in the deaf. The blind seem to use olfaction also as a scanning sense supplementary to audition.

These shifts in sensory behavior which manifest the basic perceptual adjustment of those with deafness, blindness and the deaf-blind are shown schematically in Figures one, two and three. These schematic presentations oversimplify the problem of sensory deprivation but they help to illustrate the effect of the sensory loss on the psychological organization of the individual.

Figure One

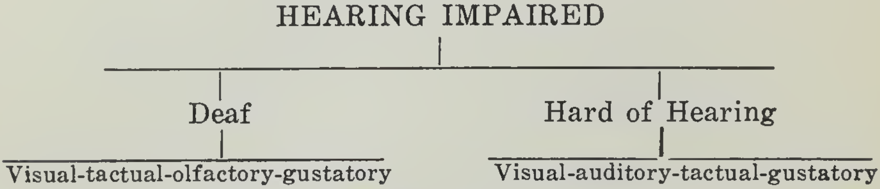

HEARING IMPAIRED
Deaf
Hard of Hearing
Visual-tactual-olfactory-gustatory
Visual-auditory-tactual-gustatory

Figure Two

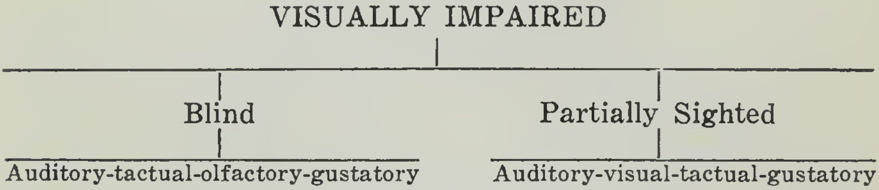
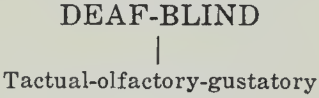

VISUALLY IMPAIRED
Blind
Partially Sighted
Auditory-tactual-olfactory-gustatory
Auditory-visual-tactual-gustatory

Figure Three



The implication is that the sensory loss predisposes the individual to make a certain compensatory adjustment or shift. When we know the nature of this adjustment it forms the basis for both diagnosis and training. The task of the diagnostician then becomes one of ascertaining the extent to which a given child has successfully achieved such a natural adjustment. The task of the educator becomes one of building and expanding what the organism has already accomplished. Any effort to superimpose or compel a different type of adjustment, because it seems desirable from the point of view of the normal, may be highly frustrating and even seriously disintegrating to the child. Examples of such attempts include blindfolding the deaf and the partially sighted to compel greater reliance on the tactual sense for speech and reading development.

Again we raise the question of what it means to be both deaf and blind. As with any group, obviously the answer will vary from child to child. There are specific factors which are known to cause variation. Among these are the age of onset, the degree of deafness, the degree of blindness, the endowed intelligence and the integrity of all other aspects of the individual. However, if deafness and blindness are from moderate to profound in extent, and especially if the sensory loss is congenital, there are certain natural consequences which might constitute a pattern. For example, the deaf-blind are restricted essentially to the close senses for exploration and contact with their outer world. It is apparent that their basic avenue of information is the tactual. The tactual is supplemented by the olfactory although the olfactory frequently serves the purpose of scanning and identification.

This can be compared to the normal in that olfaction is the background sense and tactual is the foreground sense. As with hearing and vision in the normal, the olfactory might under certain circumstances become the foreground and the tactual the background. The gustatory sense serves a more supplementary function for the deaf-blind than is the case with the normal, but because the gustatory is the closest of the close senses, it serves essentially a supplementary rather than a *lead* role. With this as a frame of reference, the problems of diagnosis and training are considered more specifically.

DIAGNOSIS

Before planning a program of training for the deaf-blind the major task is to achieve a thorough, comprehensive diagnosis. The problem confronting the diagnostician, irrespective of specialization, is to ascertain the relative integrity of the organism. This applies to the deaf-blind child as it does to any other individual. For this child the obvious areas of diagnosis are the ophthalmological, the otolaryngological and the psychological. These three areas include the type and degree of blindness, the type and degree of deafness and the type and degree of mental capacity or learning ability. However, as with all children presenting problems of multiple involvement, diagnosis of any one of the conditions is exceedingly more difficult whenever more than one disability is present. Therefore, the child with multiple involvement must be viewed diagnostically in terms of his total functioning and not just in terms of the major areas of handicap, deafness and blindness. The diagnostic approach discussed here assumes that the deaf-blind child is an altered organism as a whole and thus must be appraised in terms of his total behavior and integrity. This is presented schematically in Figure Four.

Figure Four

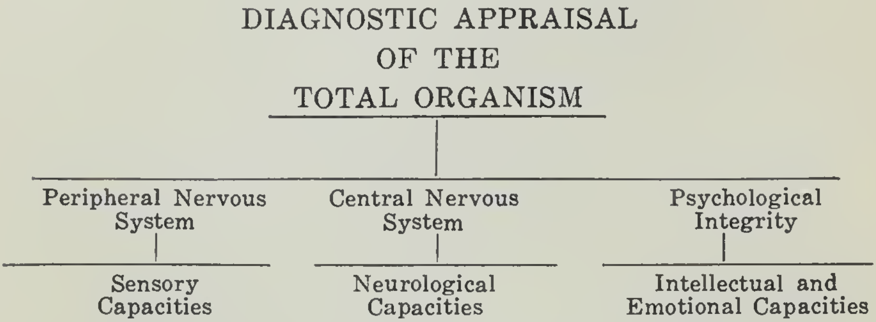


Illustration of the total organism approach to diagnosis.

As indicated in this diagram, man has three major systems which, while they overlap substantially, can be viewed diagnostically as being essentially distinct. These are the peripheral nervous system, the central nervous system and the psychological capacities. A thorough, comprehensive diagnosis of any individual entails adequate appraisal of each of these areas. Because differential diagnosis of the total involvements, the residuals, the strengths and weaknesses, is so difficult in the deaf-blind, it is necessary to appraise all three of these areas or systems in these children. This specific diagnostic problem is shown schematically in Figure Five on the next page.

Figure Five

DIAGNOSIS
OF THE
DEAF-BLIND CHILD

Residual Sensory Capacities:	Neurological Capacity:	Psychological Capacity:
Hearing	Brain damage	Mental ability
Vision	Aphasia	Emotional development and adjustment
Tactition	Epilepsy	Social maturity
Olfaction	Cerebral Palsy	Motor functioning
Gustation	etc.	Language development, etc.

Illustration of the total organism approach in the diagnostic study of the deaf-blind child.

One of the complicating factors in the diagnostic study of the deaf-blind child is the difficulty in communication. Usually these children have congenital impairment of hearing and vision. This means that they have not acquired speech prior to the onset of the sensory deprivation. This is not without exception. In some instances a child with congenital deafness has sustained blindness at school age or at a later date. In other instances the child has been blind and sustained deafness at a later age. These variations of age of onset and of which sensory impairment occurred first are of considerable importance in both diagnosis and training. They raise the question of relationship and relative influence organismically of each deprivation when they are not sustained simultaneously and congenitally.

Presumably a deaf child who later becomes blind would continue to behave, learn and adjust more like a deaf individual with the blindness as a superimposed problem. Whereas, in the case of the blind child who becomes deaf, the opposite would be true. Having heard or having seen gives a different pattern and structure to the total psychological organization of the child. This is especially significant in his educational training. Moreover, never having had hearing or vision can be expected to cause a uniqueness which is not just a deaf child plus a blind child and not just a blind child plus a deaf child, but a child whose total involvements are distinct to him.

Diagnostic techniques and procedures are required for appraisal of each of the areas of the peripheral nervous system and the psychological capacities. While much remains to be accomplished in regard to securing adequate measures of these functions in the deaf-blind, some progress has been made. A number of objective tests and clinical procedures now available can be applied. The techniques and procedures discussed here are meant to be suggestive only. Any diagnostician to be of most assistance should not only have complete familiarity with the clinical rationale and the techniques, but should have experience with the deaf and with the blind.

Sensory Capacities

Determining the nature and extent of the sensory impairments of hearing and vision is an important part of the diagnosis. It is especially urgent to ascertain as completely as possible whether practical, useful remnants of hearing and vision are present. Study of deaf-blind children has revealed that they have varying degrees of deafness and blindness. Use of amplification and refraction is possible with a number of these children. This determination is basic and should be made as early in life as possible.

Hearing. The first step in the study of the child's deafness is a complete otolaryngological appraisal; the ears, nose and throat. This includes ascertainment of whether active disease process is present, whether the deafness is progressive and the type of hearing impairment.

Tests of hearing which have been found useful can be divided into those for children below three years of age, from three to six and for those above six years. Below three years sound instrument tests are helpful.* These consist of selected bells and other instruments which produce varying intensities and frequencies of sound. They are for gross estimates of the degree of auditory acuity. In the hands of experienced clinicians diagnostic information can be secured. An advantage of this test is that it is highly flexible to the specific clinical situation encountered, requires no active co-operation from the child and is readily portable.

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* These tests have been discussed in more detail in "Auditory Disorders in Children": Myklebust, H. R. New York: Grune and Stratton, 1954.

Another useful test below three years is the free-field amplified sound test. It is administered by using recorded material, such as music and pure tones, or by live voice. It can be given only in a study center where amplifying equipment has been appropriately installed. The test consists in projecting sounds into a room through a loudspeaker. The child is placed in as standard a position as possible. If the equipment has been properly calibrated and if standard test procedures can be used, a fairly reliable determination of hearing loss can be made.

A third test which must be considered for those who are below three years of age is psychogalvanic audiometry. In some instances this test is useful. However, although various claims have been made in regard to its suitability and reliability, it seems to have only limited usefulness for some children, especially if brain damage or severe emotional disturbances are present. A further limitation is its dependence on considerable co-operation on the part of the child.

For children between three and six years of age one of the most generally applicable tests is conditioned play audiometry. This test has been used successfully with deaf-blind children. The required equipment consists of a standard audiometer and a small hammer which is used for tapping. The earphones are put on the child and a rather loud tone stimulus is presented. The hammer is placed in the preferred hand. Immediately after the tone is presented the examiner takes the child's hand and demonstrates that he is to strike the table. This demonstration is continued until the child automatically strikes the table when the tone is presented. All of these procedures require ingenuity, patience and deliberate persistence on the part of the examiner. However, this conditioned play audiometric test is one of the most satisfactory tests available when it is applied properly and at appropriate age levels. Tests described for children below three years of age might also be used for those between three and six.

After a child reaches the age of six or seven regular pure tone audiometric procedures usually are applicable. When they are not frequently it means that the child has disabilities other than sensory loss or that he has other disabilities superimposed on sensory loss. Such other disabilities often include brain damage. In this respect the deaf-blind child is no exception. Clinical experience indicates that the most reliable results are secured when the conditioned play procedure described above is used, rather than training the child to raise his finger when he hears the tone.

Vision. The first step in the study of the child's blindness is a complete ophthalmological examination. This includes ascertaining whether disease process is present, whether the blindness is progressive, and the type of visual impairment. Common etiologies in deaf-blind children are maternal rubella and retro-lental fibroplasia. This means that the ophthalmologist, often with the aid of the neurologist, is confronted with the task of determining the relative importance of visual deficiency and brain damage. Some children presumed to be deaf-blind are blind children with moderate brain damage and a resultant aphasia which often simulates deafness. Differential diagnosis entails distinguishing between central blindness, visual perceptual disturbance and blindness due to impairment of the eye and the optic nerve.

Determination of useful residual vision follows a pattern comparable to that in the area of hearing. Gross estimates include ascertaining whether the child has light perception. If so, the candle power required and his distance from the light should be determined. The next step usually entails estimating his ability to see large objects in his environment. This is followed by determining his ability to see large print, including the large E on the Snellen Chart; the commonly used test of vision for this purpose. When vision tests are applicable, classification of the degree of blindness can be made.

Unfortunately, even when sufficient residual vision is present, it is difficult to administer formal tests, such as the Snellen, to young deaf-blind children. Therefore, in early life, especially below four or five years of age, the main source of information regarding visual acuity is the ophthalmological examination. However, as in the area of hearing, gross functional tests can be used to augment the findings of the ophthalmologist. Such tests include a series of lights of varying light wave frequencies. These lights can constitute gross or fine variations and should be projected at varying distances from the child. In the area of vision, flashlights with pre-determined candle power can be used in a manner comparable to the bells and other sound instruments in the area of hearing.

Olfaction. The medical condition of the nose should be determined by the ear, nose and throat specialist. This is of considerable importance because olfactory sensitivity is of real significance to the deaf-blind child. Olfactory behavior can be studied by functional, clinical tests. Fruit such as a lemon, apple, banana and grapes has been found useful for this purpose. The fruit is first used in a manner which tests the child's ability to scan through olfaction. The fruit is moved gradually nearer to the child until he directs his attention to it, usually by reaching for it. As the child tries to apprehend the fruit, the examiner moves it out of range, then again moves it toward him. This procedure, through leading, tests the child's scanning as he tries to find the fruit.

Sometimes more than one fruit is used simultaneously. This is done to explore further the integrity of the child's curiosity through his attempts to identify and apprehend the source of the odor. This procedure has been of much value in the study of the deaf-blind child. In some instances it has revealed important clues to the differential diagnosis of deaf-blindness, blindness with brain damage, with mental retardation or with aphasia. It is apparent clinically that the deaf-blind child can make excellent, intelligent, curious use of olfaction while the blind brain-damaged child usually finds such compensatory shifts in sensory behavior impossible or only moderately useful.

Gustation. A history of the child's likes and dislikes in food is a principal step in the study of his gustatory behavior. It must be emphasized that the deaf-blind child uses his sense of gustation in a much more exploratory manner than is expected of the normal child. General exploration of his world follows the pattern of identifying by olfaction, apprehension and detailed exploration by tactual means, then further exploration by gustation. This is not without exception because, like all children, he must learn that ill effects might derive from indiscriminate exploration by taste. Diagnostic study of gustation in a clinical manner usually includes the use of citrus fruit juices and sweets. When possible these are used in a manner which precludes prior identification by olfactory or tactual means. The child's reaction is noted in terms of his total integrity and organismic behavior as suggested throughout this discussion.

Neurological Capacities

Study of the integrity of the central nervous system is primarily the task of the neurologist. The psychiatric and psychological examinations frequently provide additional information. The primary purpose of the neurological examination is to establish the degree of integrity of the central nervous system. This is a basic step in the total diagnosis inasmuch as epilepsy, mental deficiency and aphasia especially must be considered as complicating, if not as alternative conditions. While neurological diagnosis of the deaf-blind child is difficult, it has been demonstrated that thorough neurological study is possible. Furthermore, such study is essential for understanding and for adequate planning for this child's needs. Whenever possible electro-encephalography should be included as a part of the total neurological study.*

Psychological Capacities

Study of mental and emotional development is an essential aspect of a diagnostic approach to the deaf-blind child. Specific, objective, quantitative determination of either mental or emotional development is not possible at this time. A beginning has been made in the adaption of certain psychological tests. These are described briefly below. It seems that a few objective techniques can be developed for this purpose but this will require a number of years of experience and research.

The psychological and psychiatric study begins with a differential case history. Inasmuch as histories have been developed for similar purposes, both in the areas of deafness and of blindness, a history will not be given here. Such histories are available from several sources. The history should include detailed information concerning prenatal conditions, birth, early genetic development, illnesses, means of communication, visual and auditory behavior.

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* Indebtedness is expressed to Dr. Randolph K. Byers of the Children's Medical Center, Boston, Mass., for his painstaking interest and assistance in the study of the deaf-blind child.

Mental Capacity. Selected items from various test batteries can be used. These include tests such as the mazes from the Van der Lugt V. D. L. Psychomotor Test Series for Children, for the study of motor memory. Other mazes with raised lines of this type can be developed. The child's finger is first pushed over the maze. Thereafter he is started only and pursues it without further assistance. The mazes can be made as complex as desired; adaptation of the Porteus Maze Test would seem to be a logical next step.

The Seguin Formboard has shown some usefulness. The child explores the various recesses on the board with one hand while inserting the block with the other. The task must be demonstrated, preferably on a similar board which has been made for demonstration and practice purposes. Other form boards can be used or developed.

Other tests which could be adapted include matching geometric forms, building with blocks after having felt of a model, using the finger to trace stencilized drawings of common objects and then identifying these from a group of objects. Such a test can be used as a memory test.

Motor functioning. Motor development and behavior is a highly significant indicator of the integrity of any human being. The degree and type of motor functioning present is indicative of a number of conditions including mental deficiency, brain damage and marked emotional disturbance. Motor tests can be used with the deaf-blind child. These tests include developmental motor scales, such as the Bayley and Gesell. Others which have shown promise are selected items from the Oseretsky and the Heath Railwalking Test. These must be administered through actual demonstration, with the assumption that the child can perform the task after it has been demonstrated.

Language functioning. An important avenue of diagnostic study is through language or symbolic behavior. The imposition of sensory deprivation on language development results in one of its greatest limiting consequences. However, it is apparent that the deaf-blind child, who is otherwise normal, can and does acquire language. The type and extent of his language acquisition provides important clues to his psychological capacities. *Inner language* can be studied by giving him a number of common objects such as a shoe, cap, cup and coat. The way in which the child recognizes and uses these objects makes its possible for the trained clinician to make certain observations of the child's thought process. For example, when given his coat one child might show only little recognition and anticipatory behavior. Another child, as soon as he feels his coat, may begin searching his environment for his cap and for the person who usually accompanies him. Such behavior is of the utmost value in assessing the child's natural learning and development. The psychologist studying these children finds it necessary to devise a number of clinical procedures which make such observation possible.

Prior to training, the deaf-blind child's *receptive language* is very rudimentary. What communication he can receive from others is limited largely to what he can grasp from objects being placed in his hands, from being led and placed in certain positions, as when placed in a chair at a table for eating, and from learning to associate meanings with other tactual, olfactory and gustatory experiences. It must be emphasized that although such communication might be symbolic, it is non-verbal. In this respect it is comparable to the experiences of a congenitally deaf child prior to verbal language training. It also may be generally comparable to the manner in which the normal child functions during the pre-verbal age.

The deaf-blind's *expressive language,* prior to training, consists mainly of manifestations of need, curiosity and anticipation. Usually he expresses himself through scanning and other movements; he attempts to communicate with others by doing something, like trying to find the door indicating that he wishes to go out. As with children who are deaf but not blind, he learns to call the attention of others by vocalizing. In some instances one vocalization may have a different meaning from another.

Receptive and expressive languages are studied diagnostically through observation of the child's behavior and through making direct attempts at communicating with him. This is done in the manner indicated above. Demonstration with common objects, imitation of meaningful movements with the hands (taking his hands, putting them on his coat and indicating that he is to put it on) and many other similar procedures are used. This language appraisal often can be done effectively while administering other tests, such as the auditory, motor and mental tests discussed above.

Emotional development. Study of emotional development and adjustment can be accomplished only through the history and through observation of the child's behavior. Such observation includes the nature and incidence of tantrums, his toilet habits, his eating and sleeping behavior, and especially his relationship with other people. Experience with deaf-blind children suggests that the basic emotional problem is severe isolation. It is apparent that this seriously impedes the fundamental psychological processes such as identification, internationalization, ego development and general emotional contact with others. With both distance senses impaired, the child is forced into an egocentric, subjective world. Casual observation of the child suggests marked withdrawal of the type seen in schizophrenic children. However, increased contact with these children reveals a difference between the withdrawal of the schizophrenic child and the isolation of the deaf-blind child. The deaf-blind child, when properly managed and trained, seeks contact with others through the means at his disposal. Nevertheless, it seems essential that he be given help with emotional relationships as early in life as possible to prevent further isolation, withdrawal and preoccupation with his inner world. In some instances these children require almost constant emotional contact and stimulation for a certain period to prevent undesirable subjective preoccupation. Diagnostic study includes concentrated observation of these factors in each child. Such observations form an important basis for diagnosis and for planning his training program.

EDUCATION AND TRAINING

Over a period of years techniques have been developed for the education and training of the deaf-blind child. Many of these have been highly successful. It is not the purpose of this discussion to review these techniques nor to give a detailed consideration of educational methodologies. Rather, on the basis of the premises and the frame of reference discussed in the forepart of this paper, a few general principles are suggested.

All training must be oriented to the nature of the sensory deprivation which the child has sustained. Except when useful residuals of hearing and vision are present, the training program is planned to utilize most effectively the remaining senses. For example, the natural compensatory shift of the organism is to use the tactual sense for foreground and olfaction for background. Therefore, training should be planned to enhance and develop this further. This can be done through specific training in the use of olfaction as a fundamental exploratory sense and as an avenue through which to learn about the outside world. Most educational procedures do capitalize the tactual sense in a foreground manner but formal use of olfaction and gustation is just beginning.

The child needs continuous meaningful contact and stimulation. Before the child acquires verbal language he requires urgent emphasis on the development of meanings. His world lacks much of what constitutes normal experience. Many of his experiences are superficial, lacking in emotional depth and in satisfaction. Furthermore, it is during this period that he is most isolated. Therefore, he is in need of an especially designed "readiness" program. Such a program should be stimulating, enjoyable and meaningful. This program typically begins with basic daily routines such as toileting, dressing, eating, walking and running; it emphasizes the development of meaningful experiences. The child's experience is enlarged also through taste; giving him an opportunity to taste milk, water, tea and cocoa, all of which are liquid and similar in texture. The basic difference between them is determined by taste.

The same can be done with olfaction and with the tactual avenues. It is assumed that the deaf-blind child's "readiness period," as far as preparation for reading and braille is concerned, requires a much longer time than is needed for readiness work for the normal child. Another goal of this readiness work is to keep him gainfully occupied and thus prevent the psychological effects of severe isolation.

Motor activities stimulate learning and bring about pleasurable experiences. The deaf-blind child frequently enjoys climbing and other motor activities. However, his voluntary activity of this type often lacks motivation and meaning. Proper equipment, which provides guide rails for walking and running and which makes climbing possible, is assumed. Motor activities should be planned so that as the child reaches a certain point, he is rewarded. For example, when he climbs three steps, when he runs the total distance, he is given a cookie or some other reward that he likes. The rewards should be variable on the basis of the effort and the activity being encouraged. This program pursued consistently can be expected to encourage effort, persistence, feelings of success and to stimulate interest in the outside world.

Training in social maturity is a significant part of the child's program. Much patient, persistent effort is required to train the deaf-blind child in even the simple routines of daily living. Most of this training is accomplished by continuous and repeated demonstration. The Vineland Social Maturity Scale can be used as a guide. It is essential to be aware of the wide genetic age differences in normal children in learning to perform the various tasks involved in dressing and in other activities such as learning to care for oneself at the toilet. Schedules of genetic maturation for normal children provide a guide which prevents over-expectation and failure. The method of daily repeated demonstrations, when he is ready for them, is the fundamental principle through which to teach the deaf-blind child self-help.

One of the most fundamental steps in the educational program for the deaf-blind child is training in language development. The teacher with specific training in language theory and development will have an advantage when she encounters this problem. Furthermore, it is necessary to view the language problem of the deaf-blind child, not in isolation but in comparison with the language problems of the aphasic, the deaf, the blind and the normal child. When this is done some basic principles for training emerge.

The deaf-blind child requires a great deal of emphasis on inner language before stressing or requiring receptive and expressive language. This entails the building of meanings and associations deliberately for a considerable period of time. After a functional inner language has been established, it can be assumed that receptive language (tactual speech reading and braille) will be more meaningful and perhaps acquired more rapidly. Likewise, expressive language (speech and braille writing) can be expected to be acquired most readily as inner and receptive language are developed.

The principle of experience first and then the symbol (word) is basic for all language training. In a significant manner language can be viewed as the symbolic transformation of experience. This assumes experiences and meanings which await symbolization. This is a major reason for emphasizing the development of structured experience (inner language) before stressing receptive and expressive language. There seems to be no reason for not applying these fundamental concepts of language and language development to the deaf-blind child.

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